SIDEWALK INSPECTION AND MINOR REPAIR PROGRAM

Introduction:
In early 2004, the Cambridge Department of Public Works will implement an improved *Sidewalk Inspection and Minor Repair Program*. This program provides a systematic approach to maintaining the City's sidewalks, allowing sensible and efficient use of City resources in the upkeep of sidewalks. By identifying areas needing improvement, prioritizing, and tracking repairs, the Public Works will be better able to provide for pedestrian safety and reduce liability for trip and fall incidents.

Public Works has always worked to keep sidewalks in good repair. This is accomplished in three ways: repairs by in-house street maintenance crews, reconstruction of sections of sidewalks through a sidewalk and ramp repair contract, and reconstruction during more significant roadway and utility improvement projects. In the last 18 months alone, Public Works expended over $2.4 million for sidewalk replacement and repair and oversaw the reconstruction of over 6.5 miles of sidewalks through capital improvement projects.

Because of the constricted space within sidewalk tree pits and along public ways, it is not uncommon for tree roots to extend into gaps that appear over time between pavement and compacted soil underneath. As roots grow in size, they raise sidewalks and may create uneven surfaces. Responding to these situations requires balancing the health and stability of the tree against the need to keep sidewalks reasonably uniform.

Cambridge has long been committed to preserving and enhancing our significant urban tree canopy, as well as our historic brick sidewalks. Given our commitment to these amenities, unevenness in sidewalk areas will occur. We are committed to providing a reasonable response to these inevitable situations. However, with over 200 miles of sidewalks in Public Works' care, and with the constant process of sidewalk deterioration due to tree roots, ground settlement, or just plain old age, the volume of areas needing repairs or improvement that come to the Department's attention can be overwhelming. Public Works is committed to ongoing efforts to improve the City's ability to identify, prioritize, and track repairs to the large number of areas needing improvement in our sidewalks.

The attached program description outlines the major elements of this improved program: *Identification*, *Sidewalk Assessment*, *Temporary Repairs*, and *Permanent Repairs*. It also includes information on *Considerations Surrounding Trees and Sidewalks*. This program description will provide guidelines for staff as they begin to implement these program changes, as well as transparency to the process for members of the general public.

Public Works encourages members of the public to make use of the Street and Sidewalk Repair Hotline 349-4854, and the reporting form available online at www.cambridgema.gov/TheWorks. Suggestions on how to improve this new program are also welcome.

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Purpose

The *Sidewalk Inspection and Minor Repair Program* provides a systematic approach to sidewalk maintenance, allowing sensible and efficient use of City resources in the upkeep of sidewalks. By identifying areas needing improvement, prioritizing, and tracking repairs, Public Works can better provide for pedestrian safety and reduce liability for trip and fall incidents.

Program Elements

I. Identification

The identification process for sidewalk improvements will be three-fold:

A. General observations by Public Works staff
Responsibility for these observations will rest primarily with staff from the Streets and Urban Forestry Divisions.

B. Reports from the general public.
Public Works will establish a Street and Sidewalk Repair Hotline, as well as a designated form on its website, to increase ease of reporting for the general public.

C. *Assessment of priority pedestrian routes for performance based contract*
DPW supervisors will assess sidewalks with high pedestrian volumes and prioritize areas for a performance based repair contract based on their proximity to elderly housing, schools and subway stations, in that order. This program is described in more detail under section *IV. Permanent Repairs*.

II. Sidewalk Assessment

In order to respond to reports of sidewalk areas needing repairs or improvement in the most effective manner possible, Public Works has established the following guidelines.

A. Initial Inspection
All reports will be entered into a database that indicates the report date, location, and reporting party. A supervisor will visit the reported location within **two working days** to conduct an initial inspection, and will produce a report that includes information about the surface material, type and extent of the any needed repair or improvement. This information will help with the process of classification, which guides subsequent response.

B. Classification
A supervisor will classify an area needing repair or improvement using three basic categories relating to vertical displacement. Vertical displacement is the measure of the height difference between adjacent surfaces of a sidewalk. The categories for classifying vertical displacement are as follows:

1. *Minimal Displacement*
   Displacement is less than ¾ of an inch.
2. *Small Displacement*
   Displacement is between ¾ of an inch and 1-1/2 inches.
3. *Moderate to Significant Displacement*
   Displacement is 1-1/2 inches or greater.

While the majority of sidewalk areas needing repair or improvement are characterized by vertical displacement, at times horizontal displacement is of concern. Areas of horizontal displacement will also be inspected for possible needed repair or improvement.

C. Prioritization

Once a sidewalk area needing repair or improvement has been classified, it will then be prioritized based on its condition and location. Areas of high pedestrian volume, or near transit stations, high-volume bus stops, elderly housing, senior centers, or schools are considered to be areas of particular sensitivity. They are therefore given higher priority for repair.

III. Temporary Repair

The following general standards for temporary repair have been established.

A. Minimal Displacement

In general, areas of minimal displacement will be put on a "watch list" and scheduled for re-inspection within one year. However, if such an area is in a sensitive location, the supervisor may determine the need for a more immediate solution. If so, a reasonable effort will be made to make a temporary repair within 60 days.

B. Small Displacement

The inspector will mark the area with fluorescent paint to alert pedestrians of a potential hazard. The area will be scheduled for a temporary repair within a **30-day period**.

C. Moderate to Significant Displacement

The inspector will mark the area with fluorescent paint to alert pedestrians of a potential hazard. The area will be scheduled for a temporary repair within **10 working days**.

Depending on the particular circumstances, the supervisor will recommend an appropriate method of repair, which may include grinding the displaced area flush with the adjacent surface, creating a small ramp using "thin-set" concrete material, or an asphalt patch.

IV. Permanent Repairs

As part of this program, Public Works will begin to "close the loop," ensuring that temporary repairs are eventually replaced with permanent repairs. The new database will allow easier tracking of reports and sidewalk improvements.

Public Works is in the process of developing specifications for a performance-based sidewalk repair contract. This contract would allow for in-house crews to concentrate on first response and general maintenance, while a contractor could concentrate on scheduled permanent repairs or improvements. The contract will also allow the Department to begin to look at previously surveyed areas of the city where sidewalk conditions have been recorded, to systematically address permanent sidewalk repairs on streets with large stretches of areas needing improvements.

V. Repairs around Trees

Public Works relies on the professional judgment of the City Arborist to address roots affecting sidewalks on a case-by-case basis. The following information is meant as an overview of this topic, to explain some of the options available to the Arborist in these situations.

A. Potential Solutions For Existing Trees

1. *Removal of roots.*
   While root removal is a possibility, the roots causing unevenness in the sidewalk are usually the main roots supporting the tree. Before roots can be removed, a tree must be evaluated from the standpoint of size, health, stability, and extent of encroachment.
2. *Bridging areas with raised roots.*
   Areas with raised roots may be bridged with asphalt or pavers when existing roots are removed, or if the root cannot be removed, an asphalt "bridge" may be built over the root area.
3. *Installation of a root barrier in conjunction with sidewalk replacement.*
   The use of a root barrier (a chemically treated fabric) may be feasible during new sidewalk installation or repair, where there are no existing roots or where roots have been removed. However, this is not feasible for most larger, mature street trees in Cambridge, which are typically dependent on the rooting area beneath the sidewalk for health and stability.

B. Potential Solutions For New Plantings

Much of the potential for sidewalk unevenness caused by tree roots can be reduced or eliminated at the time a tree is planted, by observing the following guidelines.

1. *Adjust tree selection to favor smaller-canopied trees.*
   There are many species of smaller-stature trees with non-invasive roots. By planting these types of trees, the City could help address the conflict of root invasion on walkways. However, this would result in a substantial change in the appearance of the tree canopy as it now exists.
2. *Offset plantings onto private property.*
   Where feasible, this would provide more space for tree roots to spread away from sidewalk. This requires permission from the property owner.
3. *Evaluate establishing a minimum sidewalk width for tree planting.*
   Ideally, there should be at least one foot of soil between the curb and the tree trunk at maturity. However, following this guideline could limit the amount trees in neighborhoods with narrow sidewalks.